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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,806	07/28/2003	Brett A. Shirley	13768.604.27	4554

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EXAMINER

ASSESSOR, BRIAN J

ART UNIT	PAPER NUMBER
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2114

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/628,806	SHIRLEY ET AL.	
	Examiner	Art Unit	
	Brian J. Assessor	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213..

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/29/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6- 8, 13-15, 20, and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Brown (6,101,585).

As per claim 1, Brown teaches:

A computer-readable medium having computer-executable instructions for performing steps for backing up and restoring a data set of a node in a distributed system, comprising:

initiating a back up operation; (Brown column 5, lines 7-8)

setting state data of the data set to indicate that the data set is in a backed up state; and (Brown column 5, lines 52-54; the container ID is changed on the snapshot copy to show that it is indeed a backup copy.)

taking a snapshot of the contents of the data set including the state data to generate a backup copy, (Brown column 5, lines 22-26; an identical copy of the data is made.) the contents of the data set including a plurality of changes (Brown column 5, lines 3-7; only the modified files are backed up.) each identified by a replication identification number of the node (file system ID) and a serial number (i-node/generation number); (Brown column 4, line 65 – column 5, line 3)

resetting the state data of the data set to indicate that the data set is in normal operation after taking the snapshot. (Brown column 5, lines 7-8)

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As per claim 6, Brown teaches:

A computer-readable medium as in claim 1, wherein the replication identification number of the node is a computed Globally Unique Identifier (GUID). (Brown column 4, line 65 – column 5, line 3; inherent; Brown uses Microsoft Windows NT as its cited OS)

As per claim 7, Brown teaches:

A computer-readable medium as in claim 1, wherein the distributed system is a directory service system and the data set of the node contains directory data. (Brown column 1, lines 15-22)

Claims 8, 13, and 14 respectively are method claims corresponding to the computer readable medium claims 1, 6, and 7. Therefore claims 8, 13, and 14 are rejected for the same rationale set forth in claims 1, 6, and 7.

Claims 15, 20, and 21 respectively are computer system claims corresponding to the computer readable medium claims 1, 6, and 7. Therefore claims 15, 20, and 21 are rejected for the same rationale set forth in claims 1, 6, and 7.

Claim 15 also includes the following limitations, not included in claim 1, but still covered by the reference used:

a data manager for maintaining a data set containing a plurality of changes each identified by a replication identification number of the node and a serial number;
(Brown figure 1, element 100)

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a replication server for replicating changes made to the data set to other nodes in the distributed system; (Brown figure 1, element 102)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 9, 12, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (6,101,585) in view of Mani-Meitav (20050216788).

As per claim 2, Brown teaches:

A computer-readable medium as in claim 1, having further computer-executable instructions for performing the steps of:

detecting that the stat data of the restored data set indicates that the data set is in the backed up state; (Brown column 5, lines 52-54; the container ID is changed on the snapshot copy to show that it is indeed a backup copy.)

in response to the detecting, changing the replication identification number of the node from an old value used before the backup operation to a new value. (inherent;

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when the node is brought back on a new IP/GUID would be assigned based on its time and IP)

Brown fails to explicitly disclose a system which specifically restores the data set using the backup copy.

In page 11, paragraph 206; Mani-Meitav clearly discloses a system which uses snapshots to backup data and then restore a failed system with the snapshots.

It would have been obvious to a person of ordinary skill in the art at the time of invention to include the backup and restore functions for a failed system, and to use snapshots to do so, as taught by Mani-Meitav in order to create a fault tolerant distributed system. This would have been obvious because Mani-Meitav clearly teaches that the above process is useful for fast backup and recovery of data. (Mani-Meitav page 3, paragraph 0064)

As per claim 5, Brown teaches:

A computer-readable medium as in claim 2, having further computer-executable instructions for performing the step of storing in the data set, prior to taking the snapshot, a next serial number to be assigned to a new change to the data set. (Brown column 3, lines 46-48; the ABCN is incremented each time a file is modified, so the next serial number will be one greater than the current one.)

Claims 9 and 12 respectively are method claims corresponding to the computer readable medium claims 2 and 5. Therefore claims 9 and 12 are rejected for the same rationale set forth in claims 2 and 5.

Claims 16 and 19 respectively are computer system claims corresponding to the computer readable medium claims 2 and 5. Therefore claims 16 and 19 are rejected for the same rationale set forth in claims 2 and 5.

Claims 3, 4, 10, 11, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (6,101,585) in view of Mani-Meitav (20050216788) in further view of Lee (6,078,930).

As per claim 3:

changes made to the data set that are not yet committed prior to taking the snapshot. (Brown column 6, lines 31-40; the datasets in the snapshot that do not have a cleared archive bit are those that were not changed but not backed up in the snapshot.)

Brown and Mani-Meitav fail to explicitly disclose a system having further computer-executable instructions for performing the step of storing into the data set a lowest uncommitted serial number that corresponds to a lowest one of the serial numbers of changes made to the data set.

In column 4, lines 29-35; Lee clearly discloses a system which determines the least recent changed value for a node.

It would have been obvious to a person skilled in the art at the time of invention to include the determination of the least recent made change as taught by Lee, in order to make sure that not transactions are lost during a node failure, when they weren't included in a snapshot. This would have been obvious because Lee clearly teaches that the above method is better suited for creating a more accurate node fault tolerant system. (Lee column 3, lines 20-23)

As per claim 4:

A computer-readable medium as in claim 3, having further computer-readable instructions for performing the step of requesting a second node in the distributed system to replicate changes that have the old value of the replication identification number of the node and serial numbers equal or higher than said lowest uncommitted serial number. (Lee column 4, lines 45-50)

Claims 10 and 11 respectively are method claims corresponding to the computer readable medium claims 3 and 4. Therefore claims 10 and 11 are rejected for the same rationale set forth in claims 3 and 4.

Claims 17 and 18 respectively are computer system claims corresponding to the computer readable medium claims 3 and 4. Therefore claims 17 and 18 are rejected for the same rationale set forth in claims 3 and 4.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Assessor whose telephone number is (571) 272-0825. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571)272-3644. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'SB', with a long horizontal stroke extending to the right.

SCOTT BADERMAN
SUPERVISORY PATENT EXAMINER